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60. A method for removing organic contaminants from a substrate comprising the steps of:
holding said substrate in tank; and
filling said tank with a fluid comprising water, ozone and an additive acting as a scavenger, and wherein the fluid is comprised substantially of water.--

REMARKS

In paragraph two of the Office Action, claims 27, 34-35, 37-39 43 and 48 were rejected under 35 U.S.C. §102(b) as being anticipated by Mikio et al (Japanese Patent No. 61 004,232). In paragraph five of the Office Action, claims 27-28, 30-32, 36, 40-42 and 49 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mikio et al. In paragraph six of the Office Action, claims 27, 29, 33, 44-48 and 50 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mikio et al in view of Stanford (U.S. Patent No. 5,244,000) and further in view of Kern (Handbook of Semiconductor Wafer Cleaning Technology). To better define the claims, Applicants have amended the claims.

Mikio describes a process for removing dirt form the surface of silicon wafers using only a liquid composed of an organic acid and ozone/oxygen. Mikio further teaches that the liquid should be heated to between 100° and 150°C for better results. In particular, on page 3 of the Mikio reference, the following is described:

In this invention cleaning takes place as follows: an organic acid (for example formic acid, acetic acid) is poured into a cleaning tank, heated to 100 – 150 °C, semiconductor substrate is dipped into this liquid, ozon/oxygen is made to bubble from the bottom of the tank and the said substrate is treated.

No mention is made about using water in the liquid.

The Office Action states that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to optimize the invention as proposed by Mikio. Applicants respectfully disagree for two reasons. First, Mikio does not teach the use of water in the liquid (or the use of water as a substantial portion of the liquid). In fact, Mikio teaches away from using water in the liquid in several respects. Firstly, Mikio describes a solution that should be heated to a temperature over 100°C. In effect, Mikio discourages the use of water since the recommended temperatures cannot be reached under normal pressure if the solution contains merely water. Secondly, Mikio teaches away from the present invention, stating the following:

this invention gives little rise to problems such as heat generation by reacting sulfuric acid or nitric acid with water, or problems of environmental pollution. This is because formic acid and acetic acid at high temperatures easily dissolve into CO, CO₂, H₂O etc...."

page 4, last paragraph. By contrast, one of the aspects of the present invention is the use of a liquid which includes water. See claim 27 ("a liquid comprising water, ozone and an additive"); claim 49 ("a fluid comprising water, ozone and an additive"). The benefits of using such a liquid include lower costs for making the liquid and easier disposal of the liquid from a wastewater treatment perspective.

Second, Mikio teaches that the main component of the liquid should be the organic acid. By contrast, another aspect of the present invention is the use of small amount of additive in the liquid. See claim 27 ("the proportion of said additive in said liquid is less than 1% molar weight of said liquid"); claim 49 ("the proportion of said additive in said fluid is less than 1% molar weight of said fluid"). Similar to the benefits of using a substantially water-based liquid, the benefits for using a small amount of organic acid include lower costs and easier wastewater treatment. Thus, applicants believe that it would not have been obvious for a person skilled in

the art to (1) use water as a substantial component of the liquid for removing the organic contaminants; or (2) use a small percentage of an organic acid as part of the liquid.

The claims 27 and 49, and the claims that depend thereon, are therefore distinguishable over the cited art.

CONCLUSION

In conclusion, it is submitted that Applicants have overcome each of the Office Action's rejections and objections. Applicants have also added claims 51-60 which applicants believe are distinguishable over the cited art. It is submitted, therefore, that the Application is in condition for allowance and early notice to this effect is earnestly solicited.

If for any reason, the application is not considered to be in condition for allowance on the next Office Action and an interview would be helpful to resolve any remaining issues, the Examiner is requested to contact the undersigned attorney at (312) 913-0001.

Respectfully submitted,

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